

REMARKS

Applicant respectfully requests consideration of the subject application. This Response is submitted in response to the Office Action mailed December 18, 2008. Claims 1 and 13-42 are pending. Claims 1 and 13-42 are rejected. In this Amendment, claims 1, 22, 27, and 33 have been amended. Claims 19, 26, 32 and 40 have been cancelled with this Response. No new matter has been added.

35 U.S.C. § 112 Rejections

The rejection of claims 1 and 13-42 under 35 U.S.C. 112, first paragraph, as allegedly failing to comply with the enablement requirement should be removed. The enablement requirement refers to the requirement of 35 U.S.C. 112, first paragraph, that the specification (and not the claims) describe how to make and how to use the invention. Its purpose is to ensure that invention is communicated to the interested public in a meaningful way. In determining whether or not this requirement is satisfied, one must examine the scope of the disclosure provided in the specification from the context of the claimed invention and consider the matter from the point of view of one of ordinary skill in the art. So long as the information contained in the disclosure of an application is sufficient to inform those skilled in the relevant art how to both make and use the claimed invention, the requirement is met. See, e.g., *CFMT, Inc. v. Yieldup Int'l Corp.*, 349 F.3d 1333, 1338, 68 USPQ2d 1940, 1944 (Fed. Cir. 2003) (an invention directed to a general system to improve the cleaning process for semiconductor wafers was enabled by a disclosure showing improvements in the overall system). Detailed procedures for making and using the invention are not necessary if the description of the invention itself is sufficient to permit those skilled in the art to make and use the invention. Indeed, even when the subject matter is not in the specification portion of the application as filed but is in the claims,

the limitation in and of itself may enable one skilled in the art to make and use the claim containing the limitation.

Here, the enablement requirement is fully satisfied. As acknowledged in the present application, morphological image processing and morphological operations are well-known in the art. This is evidenced by the citation in paragraph [0025] of the specification to Luc Vincent's paper on "Morphological Area Opening and Closing for Grayscale Images".

The present invention is not directed to morphological operations per se, but rather to SEM image processing in which the use of morphological operations on images to create idealized versions thereof is only a portion of the claimed processes. As indicated, such operations, in general, are part of the common knowledge in the art and, hence, those of ordinary skill in the art are not hampered from making and using the claimed invention simply because specific formulae are not included in the claims. It is the application of such techniques (which, again, in general, are well-known) to defect detection in SEM images (a topic fully discussed in the specification) for which patent protection is sought. The present application provides a more than sufficient discussion for those of ordinary skill in the art to understand how to apply well-known morphological operations to this task and, hence, the present application fully satisfies the enablement requirement.

Accordingly, the rejections under 35 USC 112, first paragraph, should be removed.

35 U.S.C. § 102 Rejections

All claims are patentable over Gongyuan Qu , ("Wafer Defect Detection Using Directional Morphological Gradient Techniques", hereinafter "Qu"). For example, claim 1 provides the features "the morphological operation makes use of a structuring element that is at

least one of smaller and equal to a minimum distance between objects in the SEM image,” as recited in claim 1. Qu is silent with respect to a structuring element sized relative to distances between objects in an image.

Instead, the cited section of Qu discloses the use of two smaller structuring elements can be used to create a large structuring element (Qu, p. 688, col. 1). Nowhere in Qu is a discussion of a minimum distance between objects, much less a structuring element that is at least one of smaller and equal to a minimum distance between objects in the SEM image. Further, Qu suggests that the distance between objects would not be a factor because it assumed that the defects that Qu attempts to locate with the Qu approach are larger than the design feature dimension, irregular in shape, and positioned randomly with respect to the design pattern. Thus, Qu does not disclose the features of claim 1.

The cited reference does not disclose the features of independent claim 1 and claim 1 (and dependent claims) are patentable over the cited reference. Independent claims 22, 27, and 33 recite similar limitations to claim 1 and, therefore, it follows that claims 22, 27, and 33 (and dependent claims) are likewise patentable over the cited reference. Applicant, accordingly, respectfully requests withdrawal of the rejections under 35 U.S.C. § 102.

35 U.S.C. § 103 Rejections

As indicated above, Qu does not disclose the features of the independent claims. Chetverikov, et al., (“Finding defects in texture using regularity and local orientation”, hereinafter “Chetverikov”) both does not remedy the deficiencies present in the independent claims and was not cited as disclosing “the morphological operation makes use of a structuring element that is at least one of smaller and equal to a minimum distance between objects in the SEM image,” as recited in claim 1. The cited references do not disclose the features of the

independent claims and therefore, the independent claims and dependent claims are patentable over the cited references. Applicant, accordingly, respectfully requests withdrawal of the rejections under 35 U.S.C. § 103.

Applicant respectfully submits that the present application is in condition for allowance.

Please charge any shortages and credit any overages to Deposit Account No. 19-3140.

Any necessary extension of time for response not already requested is hereby requested. Please charge any corresponding fee to Deposit Account No. 19-3140.

Respectfully submitted,
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